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Intraoperative Cell Salvage and Autologous Blood Transfusion Versus Standard Care in the Treatment of Hip Fractures (WHiTE 9): A Pragmatic Randomised Controlled Superiority Trial

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Purpose: To determine the clinical effectiveness of intraoperative cell salvage, compared to standard care, in improving health related quality-of-life of patients undergoing hip fracture surgery.

Methods A multi-centre, parallel group, individually randomised controlled trial comparing cell salvage with standard care in 15 UK hospitals. 658 adults aged 60 years and older (67% women, mean age 82 years) with an operatively managed hip fracture were recruited and allocated to receive either standard care (n=330) or cell salvage (n=328). All participants were treated in accordance with local hospital care pathways in line with National Institute for Health and Care Excellence guidance and allocated to either standard care or the use of intraoperative cell salvage. The Primary outcome was health-related quality of life at 4 months. Secondary outcomes included health-related quality of life at 1 and 12 months, allogenic blood use during index admission, early postoperative delirium, residential status and mobility at 1,4 and 12 months and mortality during the first 12 months. Trial registration ISRCTN15945622.

Results Primary outcome data were available for 83% (n=544) participants. Of those allocated to cell salvage only 20% (n=66) received an autologous transfusion. There was no difference in health-related quality of life at 4 months (mean difference -0.016; 95%CI -0.066 to 0.034; p=0.527). 23.6% (n=155) participants died; the risk of death was similar between treatments (risk ratio = 1.13; 95%CI 0.79 to 1.63; p-value = 0.493). There were no differences between the numbers of participants with delirium postoperatively (1.07, 95%CI 0.73 to 1.59; odds ratio, p=0.724). A mean of 0.82 (SD 1.26) units of allogenic blood was transfused per participant, with no difference between the treatment arms (mean difference -0.16, 95%CI -0.47 to 0.14; p=0.284). 38.9% (n=256) participants experienced at least one complication, comparisons between treatment groups showed no differences in experiencing at least one complication (adjusted odds ratio = 0.63, (0.03,12.93) 95% CI; p=0.764).

Conclusion Only one fifth of participants who were allocated to receive cell salvage received an autologous transfusion. In this context, cell salvage is not a clinically effective treatment in the management of people undergoing routine primary hip fracture surgery.